Create a soccer league dashboard app using Akka, React & NoSQL database

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Goals

• Considerations while designing
  – Scalability, resilience, fault-tolerance, performance

• Ability to manage
  – Network latency, memory usage and high computation

• Handle modern architecture
  – Akka’s actor model
  – Asynchronous, powerful, reactive, concurrent and distributed
Problem

• Lack of proper web app for soccer fans
  – communication with content providers
  – real time feedback to fans
  – have to visit multiple websites to get scores
Solution

• Create a real-time soccer dashboard for Premier League UK
  – web-crawl https://www.premierleague.com/
  – back end: Akka Actors model
  – front end: React JavaScript library
  – data storage: No SQL database, like IBM Cloudant
  – deployment: Cloud, for e.g., IBM Cloud

• Code Pattern
  – Search for ibm code soccer
Akka

- Reactive Streams - a JVM standard for asynchronous stream processing with non-blocking backpressure
- Akka Streams - an implementation of Reactive Streams for Scala and Java
- Akka is a Toolkit and Runtime
- Actors - unit of execution in Akka
- Benefits
  - Event-driven model
  - Strong isolation principles
  - Location transparency
  - Lightweight
- Actor model proposed by Carl Hewitt
Akka - analogy
Akka - internals
Code Pattern - Flow

1. Cloud Foundry
2. Akka HTTP REST API
3. WebCrawler Actors
4. Cloud Foundry ReactJS app
   (soccorapi.mybluemix.net)
5. Browser

User -> Public Cloud -> Provider Cloud
Components

1. Akka: A reactive stream toolkit

2. ReactJS: A JavaScript library for building user interfaces

3. Cloudant DB: A highly scalable and performant JSON database service

4. Cloud Foundry: An open source, multi cloud application platform as a service
Deployment - Local

- Clone the project using https://github.com/IBM/akka-react-cloudant.git
- Login to IBM Cloud - http://bluemix.net/
- To signup, use https://ibm.biz/BdZqaK or http://bluemix.net/
Deployment - Local

• Click on Catalog at the top right
• Click on Data & Analytics under Platform section from left hand side menu
• Click on Cloudant NoSQL DB service
Deployment - Local

- Enter a unique Service Name for the DB
- Select the Region where your IBM Cloud account is mapped to
- Choose the Organization & Space and Click on Create
Deployment - Local

- In the Cloudant NoSQL DB homepage, click on Service credentials
- Click on New credential
Deployment - Local

- Click on Add
Deployment - Local

- Save the credentials in `akka-epl/src/main/resources/application.conf`
Deployment - Local

- Install Scala Build Tool – **sbt** from [https://www.scala-lang.org/download/](https://www.scala-lang.org/download/)

- Install **PhantomJS** – a scripted, headless browser (without GUI) used for automating web page interaction from [http://phantomjs.org/download.html](http://phantomjs.org/download.html)

- Enter the location of phantomjs binary inside `akka-epl/src/main/scala/com/epl/akka/WebHttpClient.scala`

- Run **sbt** followed by commands **compile** and **run** from `akka-epl` folder
  - Make sure you choose `CrawlingApp.scala` as the running class
  - This will crawl [https://www.premierleague.com/](https://www.premierleague.com/) and save data as JSON to Cloudant database
Deployment - Local

• In another command line window or tab, run `sbt` followed by commands `compile` and `run` from `akka-epl` folder
  – Make sure you choose `SoccerMainController.scala` as the running class

• In another command line window or tab, run `npm start` from `soccer-epl-ui` folder

• You can now access the Dashboard at [http://localhost:3000](http://localhost:3000)
Deployment - Cloud

- Install Cloud Foundry Command Line Interface (CLI) - [https://github.com/cloudfoundry/cli](https://github.com/cloudfoundry/cli)

- From your terminal / command prompt, login to Cloud Foundry (CF) using: `cf login --sso` and use the one-time password from a given URL to login

- Create a fat jar using: `sbt assembly` from `akka-epl` folder

- Make sure `manifest.yml` file is present under `akka-epl` folder to push it to the cloud

- After making changes to the source code, you can push the app using command: `cf push`
Deployment - Cloud

• For Debugging, you can see the logs to make sure your app is successfully pushed or not using **cf logs akka-react-cloudant – recent**

• You can also ssh to the application machine using command: **cf enable-ssh <app_name>** and **cf ssh <app_name>**
## Fixtures

**Saturday 14 October 2017**

<table>
<thead>
<tr>
<th>Club</th>
<th>Time</th>
<th>Opponent</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liverpool</td>
<td>06:30</td>
<td>Manchester United</td>
<td>Anfield</td>
</tr>
<tr>
<td>Burnley</td>
<td>09:00</td>
<td>West Ham United</td>
<td>Turf Moor</td>
</tr>
<tr>
<td>Crystal Palace</td>
<td>09:00</td>
<td>Chelsea</td>
<td>Selhurst Park</td>
</tr>
<tr>
<td>Manchester City</td>
<td>09:00</td>
<td>Stoke City</td>
<td>Etihad Stadium</td>
</tr>
<tr>
<td>Swansea City</td>
<td>09:00</td>
<td>Huddersfield Town</td>
<td>Liberty Stadium</td>
</tr>
<tr>
<td>Tottenham Hotspur</td>
<td>09:00</td>
<td>AFC Bournemouth</td>
<td>Wembley Stadium</td>
</tr>
<tr>
<td>Watford</td>
<td>11:30</td>
<td>Arsenal</td>
<td>Vicarage Road</td>
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</table>

**Sunday 22 October 2017**

<table>
<thead>
<tr>
<th>Club</th>
<th>Time</th>
<th>Opponent</th>
<th>Venue</th>
</tr>
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<tbody>
<tr>
<td>Everton</td>
<td>07:30</td>
<td>Arsenal</td>
<td>Goodison Park</td>
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</table>
**Results**

**Monday 25 September 2017**

<table>
<thead>
<tr>
<th>Team</th>
<th>Score</th>
<th>Score</th>
<th>Opponent</th>
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</thead>
<tbody>
<tr>
<td>Arsenal</td>
<td>2</td>
<td>0</td>
<td>West Brom</td>
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</table>

**Sunday 24 September 2017**

<table>
<thead>
<tr>
<th>Team</th>
<th>Score</th>
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<th>Opponent</th>
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<tbody>
<tr>
<td>Brighton</td>
<td>1</td>
<td>0</td>
<td>Newcastle</td>
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</table>

**Saturday 23 September 2017**

<table>
<thead>
<tr>
<th>Team</th>
<th>Score</th>
<th>Score</th>
<th>Opponent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leicester</td>
<td>2</td>
<td>3</td>
<td>Liverpool</td>
</tr>
<tr>
<td>Burnley</td>
<td>0</td>
<td>0</td>
<td>Huddersfield</td>
</tr>
<tr>
<td>Everton</td>
<td>2</td>
<td>1</td>
<td>Bournemouth</td>
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<tr>
<td>Man City</td>
<td>5</td>
<td>0</td>
<td>Crystal Palace</td>
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<tr>
<td>Southampton</td>
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<td>Man Utd</td>
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</table>

Chelsea: 0, 4
# EPL Team Standings

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Short Name</th>
<th>Played</th>
<th>Won</th>
<th>Draw</th>
<th>Lost</th>
<th>Goal For</th>
<th>Goal Difference</th>
<th>Goal Against</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
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<td>MCI</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>0</td>
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<td>2</td>
<td>19</td>
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<tr>
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<td>2</td>
<td>1</td>
<td>10</td>
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<td>2</td>
<td>1</td>
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<td>2</td>
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<td>5</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

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Code & instructions
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https://ibm-cloud.github.io/#!/
http://ibm.github.io
https://github.com/watson-developer-cloud
https://github.com/ibm-bluemix-mobile-services

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Hyderabad / Vishakapatnam:
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